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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An integrated multiple-rate optical time division multiplexing (OTDM) module comprising:

at least one integrated controllable optical delay switching and combining array for introducing at least one prescribed optical delay between a ~~plurality of first~~ optical RZ signal ~~streams stream~~ and a reference optical RZ signal stream to facilitate time division multiplexing of the ~~first and the reference~~ ~~plurality of~~ optical RZ signal streams,

wherein the at least one integrated controllable optical delay switching and combining array is adapted to controllably switch a path of the first optical RZ signal stream to one of a plurality of optical delay elements according to a data rate of the first optical RZ signal stream to introduce a selected one of a plurality of optical signal delays to at least one of the plurality of the first optical RZ signal streams stream relative to the reference optical RZ signal stream, whereby the time division multiplexing of the plurality of optical RZ signal streams may be facilitated for a number of different data rates.

2. (Original) An integrated multiple-rate OTDM module according to claim 1 wherein the at least one integrated controllable optical delay switching and combining array comprises:

at least one optical switch; and

a plurality of optical delay elements.

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3. (Original) An integrated multiple-rate OTDM module according to claim 2 wherein the at least one integrated controllable optical delay switching and combining array is arranged in a parallel configuration and further comprises:

an $n:1$ optical combiner,

wherein the at least one optical switch is a $1:n$ optical switch, and the plurality of optical delay elements comprise n optical delay elements.

4. (Original) An integrated multiple-rate OTDM module according to claim 2 wherein the at least one integrated controllable optical delay switching and combining array is arranged in a cascaded configuration and further comprises:

a $2:1$ optical combiner,

wherein the at least one optical switch comprise one $1:2$ optical switch and $n-1$ $2:2$ optical switches, and wherein the plurality of optical delay elements comprise $2n$ optical delay elements.

5. (Original) An integrated multiple-rate OTDM module according to claim 2 wherein the at least one integrated controllable optical delay switching and combining array is arranged in a parallel configuration and further comprises:

a $2:1$ optical combiner,

wherein the at least one optical switch is a $1:2$ optical switch, and the plurality of optical delay elements comprise two optical delay elements coupled to two outputs of the $1:2$ optical switch, said two optical delay elements coupled to two inputs of the $2:1$ combiner.

6. (Currently Amended) An integrated multiple-rate OTDM module according to claim 1 wherein the at least one integrated controllable optical delay switching and combining array comprise $m-1$ integrated controllable optical delay switching and combining arrays, wherein the at least one prescribed optical delay comprise $m-1$ prescribed optical delays, and ~~wherein the~~ where each of the $m-1$ integrated controllable optical delay switching and combining arrays are operable to receive an plurality of optical RZ signal streams stream comprise of m optical RZ signal streams.

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7. (Original) An integrated multiple-rate OTDM module according to claim 6 wherein m is 2, and wherein the at least one integrated controllable optical delay switching and combining array is arranged in a parallel configuration and comprises:

- a 1:n optical switch;
- n optical delay elements; and
- an n:1 optical combiner,

wherein the plurality of optical delays comprise a set of n optical delays.

8. (Original) An integrated multiple-rate OTDM module according to claim 6 wherein m is 2, and wherein the at least one integrated controllable optical delay switching and combining array is arranged in a cascaded configuration and comprises:

- a 1:2 optical switch;
- $n-1$ 2:2 optical switches;
- $2n$ optical delay elements; and
- a 2:1 optical combiner,

9. (Original) An integrated multiple-rate OTDM module according to claim 6 wherein m is 2, and wherein the at least one integrated controllable optical delay switching and combining array comprises:

- a 1:2 optical switch;
- two optical delay elements; and
- a 2:1 optical combiner.

10. (Original) An integrated multiple-rate OTDM module according to claim 6 wherein the $m-1$ prescribed optical delays comprise the set of prescribed optical delays T_j/m where $j \in \{1, \dots, m-1\}$ and T is a period of the plurality of optical RZ signal streams.

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11. (Currently Amended) An integrated multiple-rate OTDM module according to claim 1 wherein at least one electrode is deposited over a portion of a waveguide having ~~at least one of the plurality of the first~~ optical RZ signal ~~streams~~ stream travelling ~~travelling~~ traveling therein, wherein a voltage applied to the at least one electrode is used for fine tuning an optical time delay introduced to the ~~at least one of the plurality of first~~ optical RZ signal ~~streams~~ stream travelling ~~travelling~~ traveling in the portion of a waveguide.

12. (Currently Amended) An integrated multiple-rate OTDM module according to claim 1 further comprising a waveguide power tap for each of the ~~plurality of~~ optical RZ data streams.

13. (Currently Amended) An integrated optical time division multiplexing (OTDM) subsystem comprising:

an optical pulse source (OPS) chip;

an integrated multiple-rate optical time division multiplexing (OTDM) chip comprising at least one integrated controllable optical delay switching and combining array for introducing at least one prescribed optical delay between a ~~plurality of first~~ optical RZ signal ~~streams~~ stream and a reference optical RZ signal stream to facilitate time division multiplexing of the ~~plurality of first and the reference~~ optical RZ signal streams, wherein the at least one integrated controllable optical delay switching and combining array is adapted to controllably switch a path of the first optical RZ signal stream to one of a plurality of optical delay elements according to a data rate of the first optical RZ signal stream to introduce a selected one of a plurality of optical signal delays to ~~at least one of the plurality of first~~ optical RZ signal ~~streams~~ stream relative to the reference optical RZ signal stream, whereby the time division multiplexing of the ~~plurality of~~ optical RZ signal streams may be facilitated for a number of different data rates; and

optical connections interconnecting the OPS chip and the multiple-rate OTDM chip, wherein the OPS chip and the multiple-rate OTDM chip are integrated in a single substrate using hybrid packaging technology.

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14. (Original) An integrated optical time division multiplexing (OTDM) subsystem according to claim 13 wherein the OPS chip comprises:

- a photodiode;
- a laser source;
- an electro-absorption modulator (EAM); and
- a semiconductor optical amplifier (SOA),

wherein the photodiode monitors the optical power of the laser source, and the laser source produces an optical signal for gating by the EAM producing an optical pulse signal, said optical pulse signal amplified by the SOA to produce an amplified optical pulse signal, said amplified optical pulse signal provided to the multiple-rate OTDM chip for use in multiplexing a plurality of data signals.

15. (Original) An integrated optical time division multiplexing (OTDM) subsystem according to claim 14, wherein the EAM and the laser source are integrated in the same semiconductor chip.

16. (Original) An integrated optical time division multiplexing (OTDM) subsystem according to claim 14, wherein the EAM and the SOA are integrated in the same semiconductor chip.

17. (Original) An integrated optical time division multiplexing (OTDM) subsystem according to claim 14, wherein the EAM, the SOA, and the laser source are integrated in the same semiconductor chip.

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18. (Currently Amended) A multiple-rate optical time division multiplexing (OTDM) module comprising:

at least one controllable optical delay switching and combining array for introducing at least one prescribed optical delay between a ~~plurality of first optical RZ signal streams~~ stream ~~and a reference optical RZ signal stream~~ to facilitate time division multiplexing of the plurality of ~~first and the reference~~ optical RZ signal streams,

wherein the at least one controllable optical delay switching and combining array is adapted to controllably switch a path of the first optical RZ signal stream to one of a plurality of optical delay elements according to a data rate of the first optical RZ signal stream to introduce a selected one of a plurality of optical signal delays to ~~at least one of the plurality of the first~~ optical RZ signal ~~streams~~ stream relative to the reference optical RZ signal stream, whereby the time division multiplexing of the ~~plurality of~~ optical RZ signal streams may be facilitated for a number of different data rates.